

## DEFINITIONS AND SPECIAL INSTRUCTIONS

**1. Scope of survey**

This survey covers firms engaged in the manufacture of industrial gases, including elemental gases, carbon dioxide, and acetylene. Industrial gases vented or used for fuel by the producer are excluded.

**2. Figures to be reported**

Companies with more than one establishment manufacturing the products covered by this survey are requested to complete a separate form for each location. If you have not received a separate report form for each of your establishments, please call the contact shown on the report form or write to the U.S. Census Bureau for additional forms.

**a. Production**

Report the quantity of each product listed made in this plant, whether sold, transferred, consumed in this plant, or added to inventory.

*Exclude* from production amounts disposed of as waste, vented, used as a fuel, etc. *Include* products made elsewhere for this establishment on a contract basis from materials supplied by this establishment.

**b. Quantity and value of shipments**

The figures on quantity and value of shipments should include the physical shipments of all products sold, transferred to other establishments within your company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to your own branches should be assigned the same value as comparable sales to unaffiliated customers, i.e., the value includes an appropriate allocation of company overhead and profit. Products bought and resold without further manufacture or packaging should not be included in shipments.

**c. Consumption**

Report the total quantity of each specified product except carbon dioxide converted to dry ice, which was made in this

establishment and was used in further processing within this establishment. These amounts should also be included in "Production."

**3. Explanations and Definitions****ACETYLENE****Produced for compression, including cylinder and pipeline**

This includes all acetylene, whether produced by generation from calcium carbide or from another chemical process, which is intended for distribution to the merchant market. Producers of acetylene shipped by pipeline or otherwise to industrial gas companies or other distributors or resellers should report such quantities in this category.

**Produced for pipeline (excluding shipped for compression) and for consumption in this plant**

Acetylene shipped by pipeline from the producing plant to another plant location (which is owned or operated by a different company or divisions than the acetylene producing plant) for use in a chemical or other process at that location. This would not include acetylene piped to an industrial gas company or other reseller or distributor for shipment to the merchant market. Locations which own captive generators (calcium carbide), or other facilities which produce acetylene by another chemical process for use in their internal operations at this site should report here.

**CARBON DIOXIDE**

**Gas** — Include all gas produced that is not vented, regardless of whether or not it will be used as a gas or to make liquid in this plant or in any other plant. *Include* natural CO<sub>2</sub> produced from well operations. *Exclude* amounts produced and consumed in the manufacture of urea or soda ash. If stream purity is less than 90%, report quantity of contained CO<sub>2</sub> (1,000 tons of gas with a CO<sub>2</sub> concentration of 85% would be reported as 850 tons).

**Liquid** — Report all liquid produced, including liquid that will be used to make dry ice. If gas is purchased from another plant to make liquid, report only the liquid produced, since the gas will be reported by the gas producer.

*Dry ice* — Include all dry ice and pellets produced. If liquid is purchased from another plant to make dry ice, report only the dry ice produced, since the liquid will be reported by the liquid producer.

Please note that chemical by-product CO<sub>2</sub> produced and shipped on contract basis for sale by other plants, as well as CO<sub>2</sub> produced for consumption in the manufacture of urea or soda ash, should be excluded. Industrial gas plants, distributors and resellers who purchase CO<sub>2</sub> from plants which produce CO<sub>2</sub> as a chemical by-product, and then process and ship it should report this amount as production.

## ARGON

Report high purity argon production.

## HYDROGEN

### Gas produced for merchant shipment

This refers to gaseous hydrogen produced for shipment to the merchant market in tube or tank trailers and high pressure cylinders by industrial gas companies. If such gas is produced from the vaporization of liquid it should not be reported here but rather as liquid produced for merchant shipment. Air separation plants or filling stations that convert liquid to gas for shipment to customers or for filling cylinders should not report any hydrogen production.

### Gas produced for pipeline and on-site use

This includes gas produced for shipment directly via pipelines to customers for purposes other than merchant redistribution. A plant may be a large scale hydrogen plant which supplies a pipeline network to serve many customers or a steam reformer or other generator owned by an industrial gas company located on the customer's site and designated for that customer's requirement.

### Gas produced for consumption in this plant

This includes gas produced by a captive hydrogen generator for use in its own manufacturing process or other process.

### Liquid produced for merchant shipment

This includes all liquid destined for shipment to the merchant market. Liquid hydrogen shipped from the producing

plant to an air separation plant or a filling station for redistribution should be reported in this category as well as that shipped directly to the customer (including government) as a normal supply method.

### Liquid produced for supplemental shipments or uses

This includes liquid produced for shipments to on-site plants; i.e., liquid hydrogen produced to supplement gas requirements of pipeline and on-site customers that consume more gas than is provided by the primary supply.

## NITROGEN AND OXYGEN

### Liquid produced for merchant shipment

This includes liquid produced or shipped directly to merchant customers or transferred to other intermediate transfer plants before customer distribution. Owners of captive air separation plants who wholesale or barter liquid to industrial gas companies that serve the merchant market should report in this category. Exclude noncryogenic processes such as PSA (pressure swing adsorption), VPSA (vacuum pressure swing adsorption), or membranes from this category.

### Gas produced through cryogenic processes for on-site and pipeline use

This includes products produced and shipped by pipeline from a cryogenic air separation plant to an on-site consumer for use in their manufacturing or processing.

### Gas produced through noncryogenic processes by industrial gas producing companies

This includes gas produced from noncryogenic processes such as PSA (pressure swing adsorption), VPSA (vacuum pressure swing adsorption), or membranes from an industrial gas company.

### Gas produced captively for consumption in this plant

Cryogenic Processes — This includes gas produced at a captive (user owned) cryogenic air separation plant or generator solely for consumption at that location.

**Gas produced captively for consumption in this plant — Continued**

Noncryogenic Processes — This includes gas produced captively (user owned) through noncryogenic processes such as PSA (pressure swing adsorption), VPSA (vacuum pressure swing adsorption), or membranes solely for consumption at that location.

**Liquid produced for consumption in this plant**

This includes liquid products produced at a cryogenic air separation plant and used internally for uses such as a refrigerant in the liquefaction of other gases or for purging of pipelines or trailers.

**Liquid produced for supplemental shipments or uses**

This includes liquid produced for shipments to on-site or PSA (pressure swing adsorption), VPSA (vacuum pressure swing adsorption), membranes plants; i.e., liquid produced to supplement gas requirements of pipeline and on-site or PSA, VPSA, or membranes customers that consume more gas than is provided by the primary supply. Liquid shipped to on-site plants for refrigeration is included in this category. This category also includes liquid shipped to manufacturing locations normally supplied by on-site gas or PSA, VPSA, or membrane plants when such plants are inoperable, and liquid product shipped to customers via liquid pipeline.

**4. Units of measure**

Quantity — Report in thousand cubic feet 70° F, at 1 atmosphere pressure, unless otherwise specified.

Value — Report in thousand of dollars.

**5. Columnar structure of report**

When posting your figures to the original report, please be sure to report the information in the correct columns:

*Column 1* — Production

*Column 2* — Shipments (quantity)

*Column 3* — Shipments (value)

*Column 4* — Consumption

**6. Comparability**

Data reported in this survey should correspond to data reported in the Economic Census - Manufacturing Sector form. The sum of values for item codes shown in column (a) should correspond to the dollar values reported under product codes indicated in column (b) below:

Current Industrial Reports (Form MQ325C)	Economic Census - Manufacturing Sector
Item codes (a)	Product codes (b)
2106, 2108	3251201 100
3110, 3120, 3140	3251204 100
4306, 4308, 4315, 4317, 4319, 4321, 4325	3251207 100
4406, 4408, 4415, 4416, 4420, 4422, 4425	325120A 100
4105, 4204, 4208, 4211, 4213, 4216	325120D 100

## REFERENCE LIST

FORM <b>MQ325C</b>		
<b>INDUSTRIAL GASES</b>		
Product code	Item code	Item description
3251201111	<b>2106</b>	<b>Acetylene</b> ( <i>Report in 1000 cubic feet</i> ) Produced for compression, including cylinder and pipeline
3251201121	<b>2108</b>	Produced for pipeline shipment (excluding that shipped to be compressed) and for consumption in same plant
		<b>Carbon dioxide</b> ( <i>Report in short tons</i> )
3251204111	<b>3110</b>	Gas (include amounts produced and liquefied)
3251204121	<b>3120</b>	Liquid (include amounts produced and used to make dry ice)
3251204131	<b>3140</b>	Solid (dry ice)
		<b>Argon</b> ( <i>Report in 1000 cubic feet</i> )
325120D121	<b>4105</b>	High Purity Produced for cylinder, bulk delivery and pipeline shipments, and for consumption in same plant
		<b>Hydrogen</b> , including lower purity ( <i>Report on 100% basis and 1000 cubic feet</i> )
325120D131	<b>4204</b>	Gas produced for:
325120D141	<b>4208</b>	Merchant shipment
325120D151	<b>4211</b>	Pipeline and on-site use Consumption in same plant
325120D161	<b>4213</b>	Liquid produced for:
325120D171	<b>4216</b>	Merchant shipment Supplemental shipments or uses
		<b>Nitrogen</b> , including lower purity ( <i>Report on 100% basis and 1000 cubic feet</i> )
		Gas produced by:
3251207111	<b>4306</b>	Cryogenic on-site and pipeline
3251207121	<b>4308</b>	Noncryogenic processes (PSA, VPSA, membranes, etc.) by industrial gas producing companies  Captive uses for consumption in same plant (user owned)
3251207131	<b>4315</b>	Cryogenic processes
3251207141	<b>4317</b>	Noncryogenic processes (PSA, VPSA, membranes, etc.)
		Liquid produced for:
3251207151	<b>4319</b>	Merchant shipment
3251207161	<b>4321</b>	Consumption in same plant
3251207171	<b>4325</b>	Supplemental shipments or uses

# REFERENCE LIST — Continued

FORM <b>MQ325C</b>		
Product code	Item code	Item description
		<b>Oxygen</b> , including lower purity ( <i>Report on 100% basis and 1000 cubic feet</i> )
		Gas produced by:
325120A111	<b>4406</b>	Cryogenic on-site and pipeline
325120A121	<b>4408</b>	Noncryogenic processes (PSA, VPSA, membranes, etc.) by industrial gas producing companies
		Captive uses for consumption in same plant (user owned):
325120A131	<b>4415</b>	Cryogenic processes
325120A141	<b>4416</b>	Noncryogenic processes (PSA, VPSA, membranes, etc.)
		Liquid produced for:
325120A151	<b>4420</b>	Merchant shipment
325120A161	<b>4422</b>	Consumption in same plant
325120A171	<b>4425</b>	Supplemental shipments or uses
<b>NOTES:</b>		

2/26/03